



Office de la Propriété
Intellectuelle
du Canada

Un organisme
d'Industrie Canada

Canadian
Intellectual Property
Office

An agency of
Industry Canada

CA 2385170 C 2003/06/03

(11)(21) **2 385 170**

(12) **BREVET CANADIEN
CANADIAN PATENT**

(13) C

(22) Date de dépôt/Filing Date: 2002/05/07

(41) Mise à la disp. pub./Open to Public Insp.: 2002/12/24

(45) Date de délivrance/Issue Date: 2003/06/03

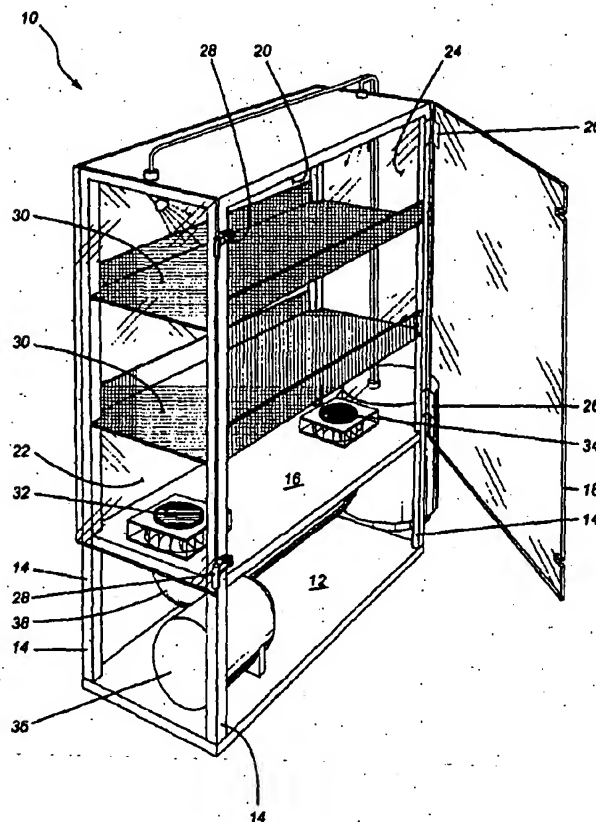
(51) Cl.Int.⁷/Int.Cl.⁷ A61L 2/20

(72) Inventeur/Inventor:
SILVER, STEVE, CA

(73) Propriétaire/Owner:
SILVER, STEVE, CA

(74) Agent: FINCHAM, ERIC

(54) Titre : CHAMBRE D'ASSAINISSEMENT D'EQUIPEMENT SPORTIF
(54) Title: SANITIZING CABINET FOR SPORTS EQUIPMENT



(57) Abrégé/Abstract:

There is provided a method and apparatus for sanitizing sports equipment which comprises a cabinet which can be sealed, first and second conduits in fluid communication with the cabinet, an ozone generator, and fans for circulating ozone containing gas through the conduits into the cabinet, the fans being operative to circulate the ozone containing gas in a first direction and

(57) **Abrégé(suite)/Abstract(continued):**

subsequently in a reverse direction. There is also provided spray heads for spraying a liquid containing freshener into the cabinet.

ABSTRACT

There is provided a method and apparatus for sanitizing sports equipment which comprises a cabinet which can be sealed, first and second conduits in fluid communication with the cabinet, an ozone generator, and fans for circulating ozone containing gas through the conduits into the cabinet, the fans being operative to circulate the ozone containing gas in a first direction and subsequently in a reverse direction.

There is also provided spray heads for spraying a liquid containing freshener into the cabinet.

SANITIZING CABINET FOR SPORTS EQUIPMENT

FIELD OF THE INVENTION

The present invention relates to an apparatus and a method for treating sports gear to sanitize the same.

BACKGROUND OF THE INVENTION

The problem of odors, mold, and mildew associated with sports equipment is common. Thus, while clothing and apparel can be washed and dried in a normal manner, much equipment cannot be subject to these processes. For example, in the sport of hockey, skates and protective pads and other paraphernalia cannot be put in commercial washers and dryers. Similarly, shoes and pads from other sports such as soccer and basketball cannot be washed and dried in a conventional manner.

It is known in the art, as shown in U.S. Patent 5,369,893, that one may use self-contained dryers for accommodating sports equipment. The dryers have walls which cause heated air to recirculate in the drying chambers to decrease the moisture content of the air and increase the drying energy efficiency. Blowers and fans associated with electric heaters operate to circulate heated air through the drying chambers.

U.S. Patent 5,369,892 discloses a chest or foot locker structure with a rigid housing wherein the top of the housing has a cover movable to an open position to allow access to the drying chamber. A motor driven fan located in an air mixing chamber within the housing draws air through a filter into the drying chamber. Air porous walls within the drying chamber allow air to mix the drying chamber back to the air mixing chamber for recirculation back into the drying chamber. Air also flows out of the drying chamber through a filter having activated charcoal to remove odors from the air

discharged into the environment. This dryer utilizes an internal motor and fan associated with the electric heater and specialized porous walls within a housing.

U.S. Patent 6,134,806 discloses a portable sports equipment bag having an air distributor which is connected with a hose to a blower and ozone generator operable to move air and ozone under pressure into the air distributor. The air distributor's one or more manifolds located within the bag, the manifolds having a plurality of apertures to allow air and ozone in the manifolds to flow into the bag to dry sports equipment and objects within the bag. There are air filters mounted on the bag to remove odors and foreign matters from the air flow from the bag into the environment.

U.S. Patent 6,263,591 discloses a portable sports equipment drying container comprising a body having a cover with an input fan mounted in one of the side walls and an output fan mounted in another one of the walls. The fans are used for drying the moisture wet clothes and equipment placed in the container for circulating air through the container.

While the above patents do teach various apparati and methods for attempting to clean and sanitize sports equipment, there exists a need for an apparatus and method which can be used on a commercial basis for sanitizing sports equipment.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a method and apparatus which would sanitize sports equipment and which method and apparatus is suitable for use on a commercial basis and is environmentally friendly.

According to one aspect of the present invention, there is provided an apparatus for sanitizing sports equipment comprising a cabinet having an access opening thereto,

means for sealing the access opening, first and second conduits in fluid communication with the cabinet, the first and second conduits being located such that a gas flowing through one of the conduits into the cabinet will circulate throughout the cabinet before exiting the other of the conduits, means for generating ozone, and means for causing ozone containing air to flow through the conduits in a first direction from the first conduit to the second conduit, means for causing the ozone containing air to flow in a second direction from the second conduit to the first conduit.

According to a further aspect of the present invention, there is provided a method of sanitizing sports equipment, the method comprising the steps of placing the sports equipment within a closed cabinet, circulating ozone containing air in a first direction through the cabinet for a first period of time, circulating the ozone containing air in a second direction opposite to the first direction through the cabinet for a second period of time, the ozone containing air having an ozone concentration of at least 20 ppm (and preferably above 50 ppm), stopping all circulation of the air and ozone for a period of time sufficient for the ozone concentration to diminish to less than 3 ppm, and removing the sports equipment from the cabinet.

Preferably, the cabinet is provided with means for securely sealing the same during the period of time when ozone containing air is within the cabinet. The tight sealing is required to prevent the escape of ozone and the possibility of environmental damage.

The walls of the cabinet are preferably formed of a transparent material resistant to ozone deterioration. Within the cabinet are means for accepting sports equipment, and in one embodiment, foraminous shelves may be provided. Naturally, hooks and other

types of retainers may be utilized for any specialized equipment.

A preferred means of circulating the ozone containing air through the cabinet preferably comprises a pair of reversible fans located within the bottom wall of the cabinet defining the space for receiving the sports equipment. Such fans are known in the art and need not be described and detailed herein.

Preferably, the apparatus also includes means for spraying a scented liquid and preferably a liquid containing a freshener into the cabinet at the end of the cycle.

In operation, the sports equipment to be sanitized is placed within the cabinet and the access opening closed. Subsequently, ozone containing air is circulated in a first direction throughout the cabinet from the first one of said conduits and exits through a second one of said conduits. This is continued for a period of time which, in the preferred embodiment, would range between 5 and 15 minutes and more preferably, approximately 10 minutes.

Subsequently, the ozone containing air is circulated in a second direction from the second conduit and exiting through the first conduit. This is continued for a period of time which preferably is similar to those times in which it is circulated in a first direction.

Subsequently, water with a freshener or spray scent is lightly sprayed in a mist and the cabinet is maintained closed for a period of time sufficient for the ozone layer to go down to at least 3 ppm and preferably below 2 ppm. The cabinet can then be opened and the sports equipment removed.

BRIEF DESCRIPTION OF THE DRAWINGS

Having thus generally described the invention, reference will be made to the accompanying drawings illustrating an embodiment thereof, in which:

Figure 1 is a perspective view of a sanitizing cabinet according to an embodiment of the present invention; and

Figure 2 is a front elevational view thereof illustrating use of the sterilizing cabinet.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in Figures 1 and 2, there is provided a sterilizing cabinet which is generally designated by reference numeral 10. Sterilizing cabinet 10 includes a base member 12 and four structural uprights 14 extending upwardly therefrom.

A compartment is defined by a compartment floor 16, a front panel 18, a rear panel 20, and a pair of side panels 22, 24. As will be seen in Figure 1, front panel 18 is hingedly connected by means of a pair of front panel hinges 26. When closed, locking members 28 are designed to engage a marginal edge of front panel 18 to maintain the compartment tightly sealed.

Placed within sanitizing cabinet 10 above floor 16 are a pair of foraminous shelves 30. Foraminous shelves 30 may be of various types of structures, either a mesh or using wires.

Mounted in floor 16 is a first fan assembly 32 which is adjacent side wall 22 and a second fan assembly 34 which is adjacent side panel 24.

Mounted in the lower portion of sanitizing cabinet 10 below floor 16 is an ozone generator 36.

A first conduit 38 is in fluid communication with first fan assembly 32 while a second conduit 40 is in fluid communication with second fan assembly 34. A connecting conduit 42 is connected to ozone generator 36 and is designed to supply both first

conduit 38 and second conduit 40.

A reservoir 44 is provided to contain a supply of water having one or more additives therein. The water is connected via conduits 46 to spray heads 48 mounted in the upper portion of the sanitizing cabinet 10. A control panel (not shown) may contain conventional control circuitry including timers.

In operation, and as shown by arrows 50, first fan assembly 32 is driven in a first direction to circulate the ozone containing air from first conduit 38 to a second conduit 40. Subsequently, the direction of circulation is reversed by reversing the directions of first and second fan assemblies 32 and 34 respectively. It will be noted that the ozone containing air circulates throughout the cabinet in order to assure that it contacts all the equipment placed therein.

It will be understood that the above described embodiment is for purposes of illustration only and that changes or modifications may be made thereto without departing from the spirit and scope of the invention.

The embodiments of the invention in which a privilege or property is claimed are as follows:

1. An apparatus for sanitizing sports equipment comprising:
a cabinet having an access opening thereto, means for sealing said access opening;
first and second conduits in fluid communication with said cabinet, said first and second conduits being located such that a gas flowing through one of said conduits into said cabinet will circulate throughout the cabinet before exiting the other of the conduits;
means for generating ozone; and
means for causing ozone containing air to flow through said conduits in a first direction from said first conduit to said second conduit, means for causing said ozone containing air to flow in a second direction from said second conduit to said first conduit.
2. The apparatus of Claim 1 further including means for spraying a liquid containing freshener into said cabinet.
3. The apparatus of Claim 1 further including a plurality of foraminous shelves placed within said cabinet to accept said sports equipment.
4. The apparatus of Claim 2 wherein said means for spraying a liquid containing freshener into said cabinet comprises a plurality of spray heads mounted within said cabinet and pump means to supply said liquid containing freshener to said spray heads.
5. The apparatus of Claim 2 wherein said cabinet has a substantially rectangular configuration and has a front wall, a rear wall, and two end walls, said front wall being hingedly connected to permit access to said cabinet.

6. The apparatus of Claim 1 further including first and second fans located at a bottom of said cabinet, said first and second fans being in fluid communication with said first and second conduits respectively, each of said fans being a reversible fan.
7. A method of sanitizing sports equipment, said method comprising the steps of:
 - placing said sports equipment within a closed cabinet;
 - circulating ozone containing air in a first direction through said cabinet for a first period of time;
 - circulating said ozone containing air in a second direction opposite to said first direction through said cabinet for a second period of time;
 - said ozone containing air having an ozone concentration of at least 20 ppm;
 - stopping all circulation of said air and ozone for a period of time sufficient for said ozone concentration to diminish to less than 3 ppm; and
 - removing said sports equipment from said cabinet.
8. The method of Claim 7 wherein said ozone containing air has an ozone concentration of at least 50 ppm.

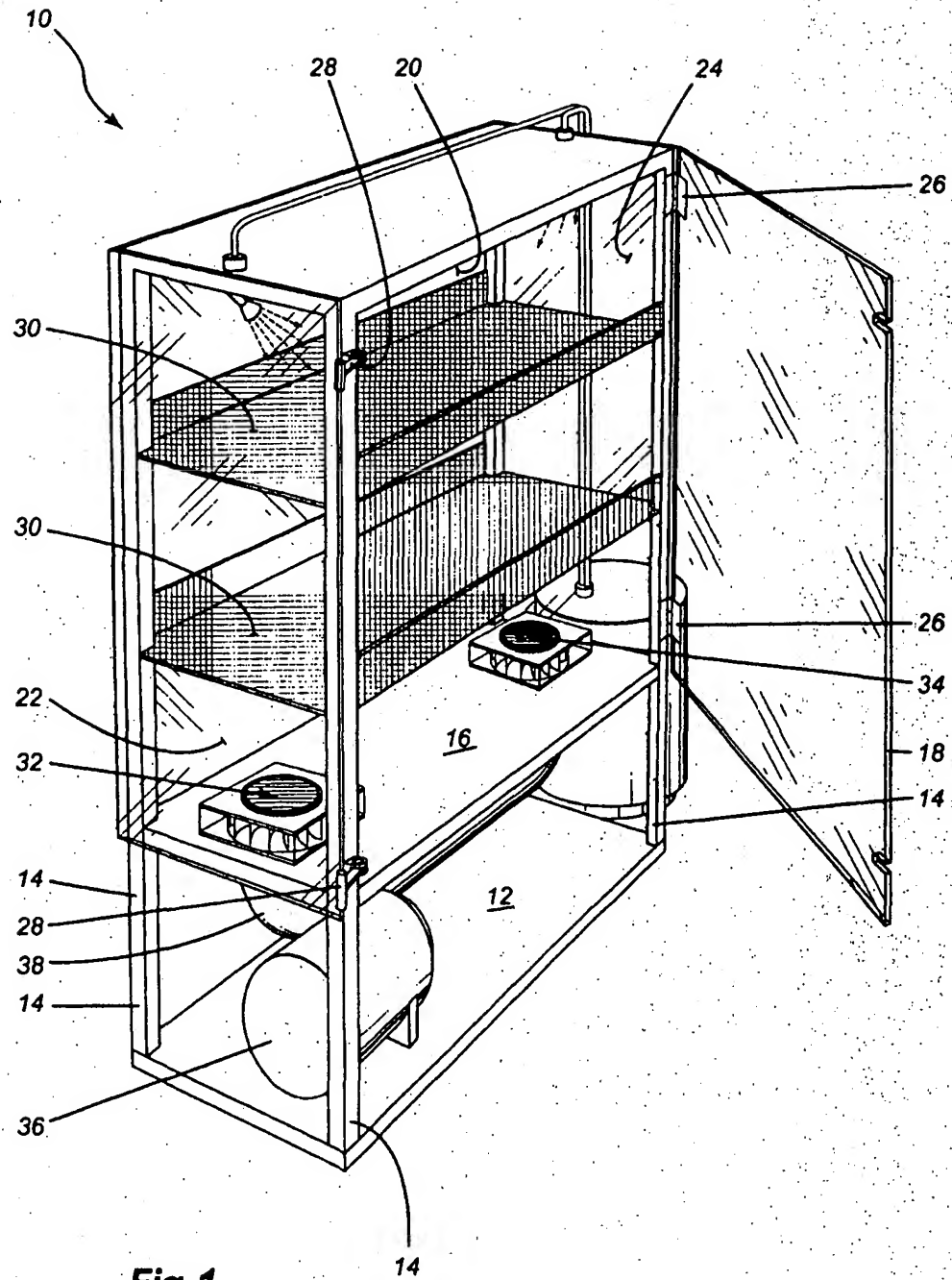


Fig-1

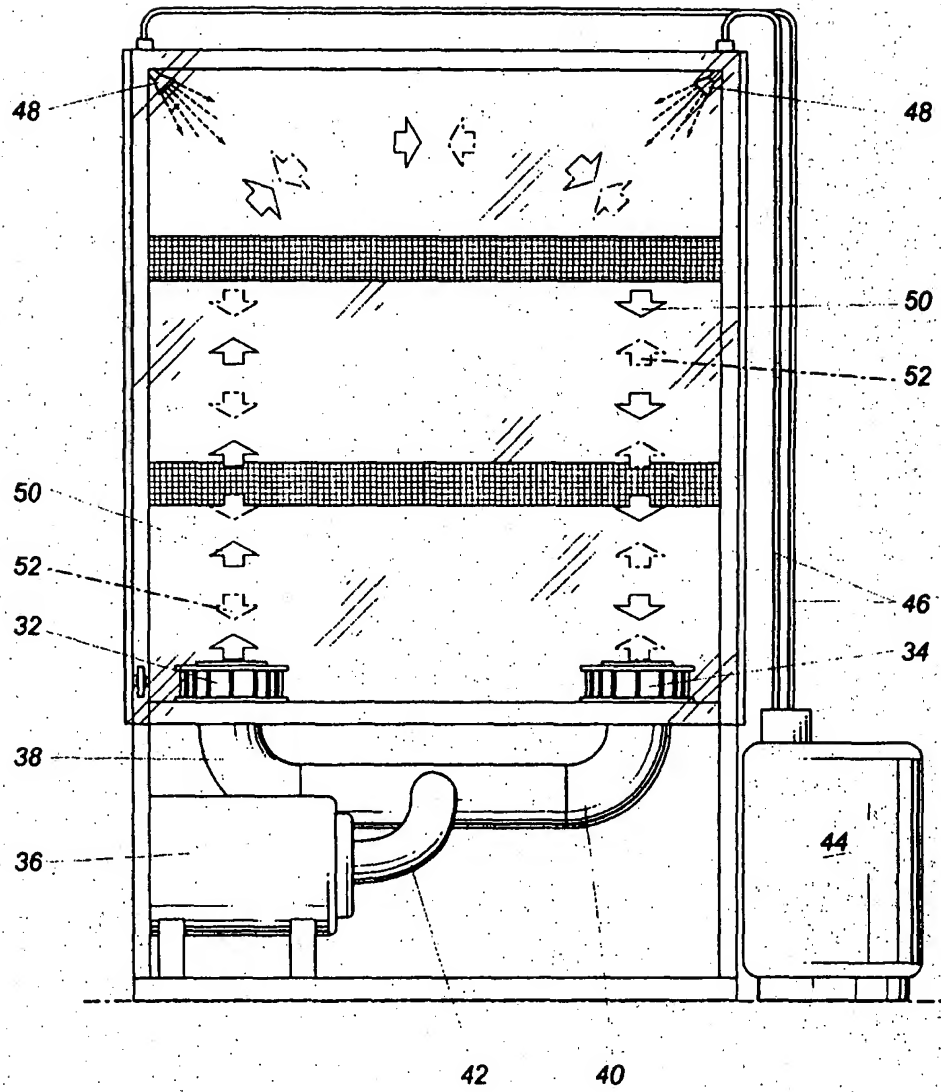


Fig-2